

IN THE CLAIMS:

1. (Previously Amended) A method for mounting a flexible substrate during the fabrication of a liquid crystal display (LCD), the method comprising:

forming a first rigid support substrate with trenches;
forming a first flexible substrate overlying the first rigid support substrate;
injecting adhesive into the trenches of the first rigid support substrate;
curing the adhesive; and,
in response to curing the adhesive, attaching the first flexible substrate to the first rigid support substrate.

2. (Previously Amended) The method of claim 1 further comprising:
subsequent to additional LCD fabrication processes,
detaching the first rigid support substrate and adhesive from the first flexible substrate.

3. (Original) The method of claim 1 further comprising:
depositing a plurality of patterned integrated circuit films overlying the first flexible substrate, forming thin film transistors (TFTs);
forming a liquid crystal (LC) layer overlying the TFTs; and,
forming a color filter layer over the LC layer.

4. (Previously Amended) The method of claim 3 further comprising:

- forming a second flexible substrate overlying the color filter;
- forming a second rigid support substrate with trenches overlying the second flexible substrate;
- injecting adhesive into the trenches of the second rigid support substrate;
- curing the adhesive; and,
- in response to curing the adhesive, attaching the second flexible substrate to the second rigid support substrate.

5. (Previously Amended) The method of claim 1 wherein injecting adhesive into the trenches of the first rigid support substrate includes injecting the adhesive in a vacuum environment.

6. (Previously Amended) The method of claim 5 wherein forming a first rigid support substrate with trenches includes forming trenches with at least one trench mouth;

- wherein injecting adhesive into the trenches of the first support substrate includes:
 - creating a vacuum environment in the first rigid support substrate trenches;
 - supplying adhesive to the at least one mouth of the first rigid support substrate trenches;
 - in response to returning the first rigid support substrate to ambient pressure, pulling the adhesive into the first rigid support substrate trenches vacuum environment through the at least one mouth.

7. (Original) The method of claim 6 wherein returning the first rigid support substrate to ambient pressure includes supplying an N2 atmosphere at ambient pressure.

8. (Original) The method of claim 1 wherein forming the first rigid support substrate with trenches includes forming a rigid support substrate from a material selected from the group including glass and plastic.

9. (Original) The method of claim 1 wherein forming the first flexible substrate overlying the first rigid support substrate includes forming a flexible substrate from a material selected from the group including plastic and metal films.

10. (Original) The method of claim 1 wherein forming the first rigid support substrate with trenches includes:
forming a rigid support substrate with a top surface;
forming a photoresist pattern with openings exposing the underlying support substrate top surface;
etching the exposed support substrate top surface to form the trenches in the support substrate; and
removing the photoresist.

11. (Previously Amended) A method for mounting a flexible substrate in the fabrication of a liquid crystal display (LCD), the method comprising:

forming a first rigid support substrate;
introducing a first preformed pattern of spacers, with spacer channels between the spacers, overlying the first rigid support substrate;
forming a first flexible substrate overlying the first pattern of spacers;
injecting adhesive into the spacer channels;
curing the adhesive; and,
in response to curing the adhesive, attaching the first flexible substrate to the first rigid support substrate.

12. (Previously Amended) The method of claim 11 further comprising:
subsequent to additional LCD fabrication processes,
detaching the first rigid support substrate, spacers, and adhesive from the first flexible substrate.

13. (Original) The method of claim 11 further comprising:
depositing a plurality of patterned integrated circuit films overlying the first flexible substrate, forming thin film transistors (TFTs);
forming a liquid crystal (LC) layer overlying the TFTs; and,
forming a color filter layer over the LC layer.

14. (Previously Amended) The method of claim 13 further comprising:
forming a second flexible substrate overlying the color filter;

introducing a second preformed pattern of spacers, with spacer channels between the spacers, overlying the second flexible substrate;

forming a second rigid support substrate overlying the second pattern of spacers;

injecting adhesive into the spacer channels;

curing the adhesive; and,

in response to curing the adhesive, attaching the second flexible substrate to the second rigid support substrate.

15. (Original) The method of claim 11 wherein injecting adhesive into the spacer channels includes injecting the adhesive in a vacuum environment.

16. (Previously Amended) The method of claim 15 wherein introducing a first preformed pattern of spacers, with spacer channels between the spacers includes introducing spacer channels with at least one mouth; and

wherein injecting adhesive into spacer channels includes:

creating a vacuum environment in the spacer channels;

supplying adhesive to the at least one spacer channel mouth;

returning the first rigid support substrate to ambient pressure; and

in response to returning the first rigid support substrate to ambient pressure, pulling the adhesive into the spacer channels vacuum environment through the at least one mouth.

17. (Original) The method of claim 16 wherein returning the first rigid support substrate to ambient pressure includes supplying an N₂ atmosphere at ambient pressure.

18. (Previously Amended) The method of claim 11 wherein forming the first rigid support substrate includes forming a rigid support substrate from a material selected from the group including glass and plastic.

19. (Original) The method of claim 11 wherein forming the first flexible substrate overlying the pattern of spacers includes forming the first flexible substrate from a material selected from the group including plastic and metal films.

20. (Withdrawn) A structure to support a flexible substrate liquid crystal display (LCD) during fabrication, the structure comprising:
a first rigid temporary support substrate with trenches;
a first flexible substrate overlying the temporary support substrate; and

vacuum injected adhesive in the trenches to attach the first temporary rigid support substrate to the first flexible support substrate.

21. (Withdrawn) The structure of claim 20 further comprising:
integrated circuit (IC) films, formed into thin film transistors (TFTs), overlying the first flexible substrate.

22. (Withdrawn)The structure of claim 21 further comprising:

a liquid crystal (LC) layer overlying the TFTs;
a color filter overlying the LC layer.

23. (Withdrawn)The structure of claim 22 further comprising:

a second flexible substrate overlying the color filter;
a second rigid temporary support substrate with trenches overlying the second flexible substrate; and,
vacuum injected adhesive in the second temporary support substrate trenches to attach the second temporary rigid support structure to the second flexible support structure.

24. (Withdrawn)The structure of claim 20 wherein the first temporary support substrate is made from a material selected from the group including glass and plastic.

25. (Withdrawn)The structure of claim 20 wherein the first flexible substrate is made from a material selected from the group including plastic and metal films.

26. (Withdrawn)A structure to support a flexible substrate liquid crystal display (LCD) during fabrication, the structure comprising:
a first rigid temporary support substrate;
a first temporary pattern of spacers, with spacer channels between the spacers, overlying the first temporary support substrate;

a first flexible substrate overlying the first temporary pattern of spacers; and

vacuum injected adhesive in the spacer channels to attach the first temporary support substrate to the first flexible substrate.

27. (Withdrawn)The structure of claim 26 further comprising:

integrated circuit (IC) films, formed into thin film transistors (TFTs), overlying the first flexible substrate.

28. (Withdrawn)The structure of claim 27 further comprising:

a liquid crystal (LC) layer overlying the TFTs; and,
a color filter overlying the LC layer.

29. (Withdrawn)The method of claim 28 further comprising:

a second flexible substrate overlying the color filter;
a second temporary pattern of spacers, with spacer channels between the spacers, overlying the second flexible substrate;
a second rigid temporary support substrate overlying the second temporary pattern of spacers; and,
vacuum injected adhesive in the spacer channels to attach the second temporary support substrate to the second flexible substrate.

30. (Withdrawn)The structure of claim 26 wherein the first temporary support substrate is made from a material selected from the group including glass and plastic.

31. (Withdrawn)The structure of claim 26 wherein the first flexible substrate is made from a material selected from the group including plastic and metal films.